## CLAIMS

What is claimed is:

**1.** An isolated nucleic acid comprising a nucleotide sequence encoding a Tcl-1b protein, wherein said nucleotide sequence is a cDNA sequence.

**2.** The isolated nucleic acid of claim 1, wherein said nucleotide sequence encodes a human Tcl-1b protein having an amino acid sequence of SEQ ID NO:39 from amino acid number 1 to 128.

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**3.** An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion encoding a Tcl-1b protein fragment.

**4.** An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion of the sequence depicted in SEQ ID NO: 40.

**5.** The isolated nucleic acid of claim 1, comprising a nucleotide sequence of SEQ ID NO:38 from nucleotide number 1to 1152.

**6.** A Tcl-1b protein.

**7.** The isolated Tcl-1b protein of claim 6, comprising an amino acid sequence of SEQ. ID. NO: 39 from amino acid 1-128.

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**8.** An isolated nucleic acid, comprising a sequence encoding a fragment of a protein having an amino sequence of SEQ ID NO:39 from amino acid number 1 to 128, which fragment can be specifically bound by an antibody to a Tcl-1b protein.

**9.** A recombinant DNA vector, comprising a nucleotide sequence that encodes a Tcl-1b protein, wherein said nucleotide sequence is a cDNA sequence.

**10.** A host cell that contains said recombinant DNA vector of claim 7.

**11.** The recombinant DNA vector of claim 7, wherein the nucleotide sequence encodes a human Tcl-1b protein having an amino acid sequence of SEQ ID NO:39 from amino acid number 1 to 128.

**12.** An isolated nucleic acid of not more than 50 kilobases which contains at least a 50 nucleotide portion of SEQ ID NO: 40.

**13**. An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to the cDNA sequence of SEQ ID NO:38, said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:38.

**14** An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tcl-1b protein, which protein has an amino acid sequence of SEQ ID NO:39, and said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:38.

**15.** An antisense molecule, comprising a nucleotide sequence complementary to at least a part of a coding sequence of a Tcl-1b protein, which is hybridizable to a Tcl-1b mRNA.

**16.** The antisense molecule of claim 15, wherein said nucleotide sequence is complementary to a least a part of the sequence depicted in SEQ. ID. NO: 38.

**17.** A fusion protein comprising a Tcl-1b protein sequence of at least 10 amino acids linked to a non-Tcl-1b protein sequence.

**18.** An antibody which binds to an epitope of a Tcl-1b protien.

**19.** An isolated protein comprising an amino acid sequence having at least 70% amino acid sequence identity to an amino acid sequence depicted in SEQ. ID. NO: 39, over a contiguous sequence of at least 25 amino acids.

**20.** A method for detecting a target sequence indicative of a chromosome 14 abnormality in a sample, comprising the steps of:

a) amplifying said target sequence in said sample using a first primer of 18 to 25 nucleotides complementary to a TCL-1b nucleotide sequence of SEQ. ID. NO: 38, and a sencond primer complementary to a region telomeric or centromeric, preferably from a T-cell receptor $\alpha/\delta$ locus, to said Tcl-1b gene; and

b) detecting any resulting amplified target sequence in which the presence of said amplified target sequence is indicative of said chromosome 14 abnormality.

**21.** The method of claim 20, wherein said chromosome 14 abnormality is in a Tcl-1b locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

**22** A host cell that contains a recombinant vector comprising a cDNA sequence that encodes a human Tcl-1b protein having the amino acid sequence of SEQ ID NO:39 from amino acid number 1 to 128.

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**23**. A host cell that contains a recombinant vector comprising a nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tcl-1b protein, which protein has the amino acid sequence of SEQ ID NO:39, and said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:38.

Rl.126 ~~25.~~ 24. A pharmaceutical composition, comprising said antisense molecule of claim 15 or 16 in a pharmaceutically acceptable carrier.

Rl.126 ~~26.~~ 25. A pharmaceutical composition, comprising said antibody of claim 18 in a pharmaceutically acceptable carrier.

Rl.126 ~~27.~~ 26. A method for detecting a target nucleotide sequence indicative of a chromosome 14 abnormality in a nucleic acid sample, comprising the steps of:

a) hybridizing said sample with a nucleic acid probe of not more than 10 kilobases, comprising in the range of 15-1152 nucleotides complementary to said nucleotide sequence of SEQ. ID. NO: 38; and

b) detecting or measuring an amount of any resulting hybridization between said probe and said target sequence within said sample.

Rl.126 ~~28.~~ 27. The method of claim 27, wherein said chromosome 14 abnormality is in a Tcl-1b locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

R1.126 28. ~~29.~~ A method for detecting a Tcl-1b protein in a patient sample, preferably a human sample, comprising:

a) contacting said patient sample with an anti-Tcl-1b antibody under conditions such that immunospecific binding occurs; and

b) detecting or measuring an amount of any immunospecific binding by said antibody.

R1.126 29. ~~30.~~ A diagnostic kit, comprising in one or more containers, a pair of primers, each having at least 15-25 nucleotides, in which at least one of said primers is hybridizable to SEQ. ID. NO: 38 or it complement and wherein said primers are capable of priming DNA synthesis in a nucleic acid amplification reaction.

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R1.126 30. ~~31.~~ A method for treating a disease state associated with a chromosome 14 abnormality in a mammal, preferably a human, suffering from said disease state associated with said chromosome 14 abnormality, comprising administering a therapeutically effective amount of a Tcl-1b antisense molecule or an anti-Tcl-1b antibody to said mammal.

R1.126 31. ~~32.~~ The method of claim 31, wherein said disease state comprises a T-cell leukemia or lymphoma and said chromosome 14 abnormality comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

R1.126 32. ~~33.~~ An isolated nucleic acid comprising a nucleotide sequence encoding a Tng1 protein, wherein said nucleotide sequence is a cDNA sequence.

Rl.126 33 ~~34~~. The isolated nucleic acid of claim 33, wherein said nucleotide sequence encodes a human Tng1 protein having an amino acid sequence of SEQ ID NO:42 from amino acid number 1 to 141

Rl.126 34 ~~35~~. An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion encoding a Tng1 protein fragment.

Rl.126 35. ~~36~~. An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion of the sequence depicted in SEQ ID NO: 45.

Rl.126 36. ~~37~~. The isolated nucleic acid of claim 33, comprising a nucleotide sequence of SEQ ID NO:41 from nucleotide number 1to **1500.**

Rl.126 37. ~~38~~. A Tng1 protein.

Rl.126 38. ~~39~~. The isolated Tng1 protein of claim 38, comprising an amino acid sequence of SEQ. ID. NO: 42 from amino acid 1-141.

Rl.126 39. ~~40~~. An isolated nucleic acid, comprising a sequence encoding a fragment of a protein having an amino sequence of SEO ID NO:42 from amino acid number 1 to 141, which fragment can be specifically bound by an antibody to a Tng1 protein.

Rl.126 40. ~~41~~. A recombinant DNA vector, comprising a nucleotide sequence that encodes a Tng1 protein, wherein said nucleotide sequence is a cDNA sequence.

Rl.126 41. ~~42~~. A host cell that contains said recombinant DNA vector of claim 39.

R1.126 42/43. The recombinant DNA vector of claim 39, wherein the nucleotide sequence encodes a human Tng1 protein having an amino acid sequence of SEQ ID NO:42 from amino acid number 1 to 141.

R1.126 43/44. An isolated nucleic acid of not more than 50 kilobases which contains at least a 50 nucleotide portion of SEQ ID NO:45.

R1.126 44/45. An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to the cDNA sequence of SEQ ID NO:41, said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:41.

R1.126 45/46 An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tng1 protein, which protein has an amino acid sequence of SEQ. ID. NO: 42, and said nucleic acid containing at least an 25 nucleotide portion of SEQ. ID. NO: 41.

R1.126 46/47. An antisense molecule, comprising a nucleotide sequence complementary to at least a part of a coding sequence of a Tng1 protein, which is hybridizable to a Tng1 mRNA.

R1.126 47/48. The antisense molecule of claim 47, wherein said nucleotide sequence is complementary to a least a part of the sequence depicted in SEQ. ID. NO:41.

R1.126 48/49. A fusion protein comprising a Tng1 protein sequence of at least 10 amino acids linked to a non- Tng1 protein sequence.

R1.126 49/50. An antibody which binds to an epitope of a Tng1 protien.

Rl.126 50/51. An isolated protein comprising an amino acid sequence having at least 70% amino acid sequence identity to an amino acid sequence depicted in SEQ. ID. NO: 42, over a contiguous sequence of at least 25 amino acids.

Rl.126 51/52. A method for detecting a target sequence indicative of a chromosome 14 abnormality in a sample, comprising the steps of:

a) amplifying said target sequence in said sample using a first primer of 18 to 25 nucleotides complementary to a TNG1 nucleotide sequence of SEQ. ID. NO: 41, and a second primer complementary to a region telomeric or centromeric, preferably from a T-cell receptor $\alpha/\delta$ locus, to said Tng1 gene; and

b) detecting any resulting amplified target sequence in which the presence of said amplified target sequence is indicative of said chromosome 14 abnormality.

Rl.126 52/53. The method of claim 52, wherein said chromosome 14 abnormality is in a Tng1 locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

Rl.126 53/54 A host cell that contains a recombinant vector comprising a cDNA sequence that encodes a human Tng1 protein having the amino acid sequence of SEQ. ID. NO: 42 from amino acid number 1 to 141.

Rl.126 54/55. A host cell that contains a recombinant vector comprising a nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tng1 protein, which protein has the amino acid sequence of SEQ. ID. NO: 42, and said nucleic acid containing at least an 25 nucleotide portion of SEQ. ID. NO: 41.

Rl.126 55. ~~56.~~ A pharmaceutical composition, comprising said antisense molecule of claim 47 or 48 in a pharmaceutically acceptable carrier.

Rl.126 56. ~~57.~~ A pharmaceutical composition, comprising said antibody of claim 50 in a pharmaceutically acceptable carrier.

Rl.126 57. ~~58.~~ A method for detecting a target nucleotide sequence indicative of a chromosome 14 abnormality in a nucleic acid sample, comprising the steps of:

a) hybridizing said sample with a nucleic acid probe of not more than 10 kilobases, comprising in the range of 15-1500 nucleotides complementary to said nucleotide sequence of SEQ. ID. NO: 41; and

b) detecting or measuring an amount of any resulting hybridization between said probe and said target sequence within said sample.

Rl.126 58. ~~59.~~ The method of claim 58, wherein said chromosome 14 abnormality is in a Tng1 locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

Rl.126 59. ~~60.~~ A method for detecting a Tng1 protein in a patient sample, preferably a human sample, comprising:

a) contacting said patient sample with an anti- Tng1 antibody under conditions such that immunospecific binding occurs; and

b) detecting or measuring an amount of any immunospecific binding by said antibody.

Rl.126 60. ~~61.~~ A diagnostic kit, comprising in one or more containers, a pair of primers, each having at least 15-25 nucleotides, in which at least one of said primers is hybridizable to SEQ. ID. NO: 41 or it complement

and wherein said primers are capable of priming DNA synthesis in a nucleic acid amplification reaction.

Rl.126 61. ~~62.~~ A method for treating a disease state associated with a chromosome 14 abnormality in a mammal, preferably a human, suffering from said disease state associated with said chromosome 14 abnormality, comprising administering a therapeutically effective amount of a Tng1 antisense molecule or an anti- Tng1 antibody to said mammal.

Rl.126 62. ~~63.~~ The method of claim 62, wherein said disease state comprises a T-cell leukemia or lymphoma and said chromosome 14 abnormality comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

Rl.126 63. ~~64.~~ An isolated nucleic acid comprising a nucleotide sequence encoding a Tng2 protein, wherein said nucleotide sequence is a cDNA sequence.

Rl.126 64. ~~65.~~ The isolated nucleic acid of claim 64, wherein said nucleotide sequence encodes a human Tng2 protein having an amino acid sequence of SEQ. ID. NO: 44 from amino acid number 1 to 110.

Rl.126 65. ~~66.~~ An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion encoding a Tng2 protein fragment.

Rl.126 66. ~~67.~~ An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion of the sequence depicted in SEQ. ID. NO: 46.

R1.126 ~~68~~ 67. The isolated nucleic acid of claim 64, comprising a nucleotide sequence of SEQ ID NO: 43 from nucleotide number 1to **XXX**.

R1.126 ~~69~~ 68. A Tng2 protein.

R1.126 ~~70~~ 69. The isolated Tng2 protein of claim 69, comprising an amino acid sequence of SEQ. ID. NO: 44 from amino acid 1-110.

R1.126 ~~71~~ 70. An isolated nucleic acid, comprising a sequence encoding a fragment of a protein having an amino sequence of SEQ. ID. NO:44 from amino acid number 1 to 110, which fragment can be specifically bound by an antibody to a Tng2 protein.

R1.126 ~~72~~ 71. A recombinant DNA vector, comprising a nucleotide sequence that encodes a Tng2 protein, wherein said nucleotide sequence is a cDNA sequence.

R1.126 ~~73~~ 72. A host cell that contains said recombinant DNA vector of claim 70.

R1.126 ~~74~~ 73. The recombinant DNA vector of claim 70, wherein the nucleotide sequence encodes a human Tng2 protein having an amino acid sequence of SEQ ID NO:44 from amino acid number 1 to 110.

R1.126 ~~75~~ 74. An isolated nucleic acid of not more than 50 kilobases which contains at least a 50 nucleotide portion of SEQ ID NO:46.

R1.126 ~~76~~ 75. An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to the cDNA sequence of SEQ ID NO:43, said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:43.

R1.126 76/74 An isolated nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tng2 protein, which protein has an amino acid sequence of SEQ ID NO: 44, and said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO:43.

R1.126 77. ~~78.~~ An antisense molecule, comprising a nucleotide sequence complementary to at least a part of a coding sequence of a Tng2 protein, which is hybridizable to a Tng2 mRNA.

R1.126 78. ~~79.~~ The antisense molecule of claim 78, wherein said nucleotide sequence is complementary to a least a part of the sequence depicted in SEQ. ID. NO: 43.

R1.126 79. ~~80.~~ A fusion protein comprising a Tng2 protein sequence of at least 10 amino acids linked to a non- Tng2 protein sequence.

R1.126 80 ~~81.~~ An antibody which binds to an epitope of a Tng2 protien.

R1.126 81. ~~82.~~ An isolated protein comprising an amino acid sequence having at least 70% amino acid sequence identity to an amino acid sequence depicted in SEQ. ID. NO: 44, over a contiguous sequence of at least 25 amino acids.

R1.126 82. ~~83.~~ A method for detecting a target sequence indicative of a chromosome 14 abnormality in a sample, comprising the steps of:

a) amplifying said target sequence in said sample using a first primer of 18 to 25 nucleotides complementary to a TNG2nucleotide sequence of SEQ. ID. NO: 43, and a sencond primer complementary to a region telomeric or centromeric, preferably from a T-cell receptor $\alpha/\delta$ locus, to said Tng2 gene; and

b) detecting any resulting amplified target sequence in which the presence of said amplified target sequence is indicative of said chromosome 14 abnormality.

R1.126 83. ~~84.~~ The method of claim 83, wherein said chromosome 14 abnormality is in a Tng2 locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

R1.126 84. ~~85.~~ A host cell that contains a recombinant vector comprising a cDNA sequence that encodes a human Tng2 protein having the amino acid sequence of SEQ ID NO: 44 from amino acid number 1 to 110.

R1.126 85 ~~86~~. A host cell that contains a recombinant vector comprising a nucleic acid that is capable of hybridizing under stringent conditions to a nucleotide sequence that is complementary to a cDNA sequence that encodes a Tng2 protein, which protein has the amino acid sequence of SEQ ID NO: 44, and said nucleic acid containing at least an 25 nucleotide portion of SEQ ID NO: 43.

R1.126 86. ~~87.~~ A pharmaceutical composition, comprising said antisense molecule of claim 78 or 79 in a pharmaceutically acceptable carrier.

R1.126 87. ~~88.~~ A pharmaceutical composition, comprising said antibody of claim 80 in a pharmaceutically acceptable carrier.

R1.126 88. ~~89.~~ A method for detecting a target nucleotide sequence indicative of a chromosome 14 abnormality in a nucleic acid sample, comprising the steps of:

a) hybridizing said sample with a nucleic acid probe of not more than 10 kilobases, comprising in the range of 15-2000 nucleotides complementary to said nucleotide sequence of SEQ. ID. NO: 43; and

b) detecting or measuring an amount of any resulting hybridization between said probe and said target sequence within said sample.

Pl.126 89. ~~90.~~ The method of claim 89, wherein said chromosome 14 abnormality is in a Tng2 locus and comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.

Pl.126 90. ~~91.~~ A method for detecting a Tng2 protein in a patient sample, preferably a human sample, comprising:

a contacting said patient sample with an anti- Tng2 antibody under conditions such that immunospecific binding occurs; and

c) detecting or measuring an amount of any immunospecific binding by said antibody.

Pl.126 91. ~~92.~~ A diagnostic kit, comprising in one or more containers, a pair of primers, each having at least 15-25 nucleotides, in which at least one of said primers is hybridizable to SEQ. ID. NO: 43 or it complement and wherein said primers are capable of priming DNA synthesis in a nucleic acid amplification reaction.

Pl.126 92. ~~93.~~ A method for treating a disease state associated with a chromosome 14 abnormality in a mammal, preferably a human, suffering from said disease state associated with said chromosome 14 abnormality, comprising administering a therapeutically effective amount of a Tng2 antisense molecule or an anti- Tng2 antibody to said mammal.

Pl.126 93. ~~94.~~ The method of claim 93, wherein said disease state comprises a T-cell leukemia or lymphoma and said chromosome 14 abnormality

comprises a t(14:14)(q11:q32) translocation or an inv (14)(q11:q32) inversion.